

*CHANGING WELL DEMOGRAPHICS IN
NAIROBI AND KISUMU: A 'BAROMETER' OF
GROUNDWATER DEVELOPMENT*

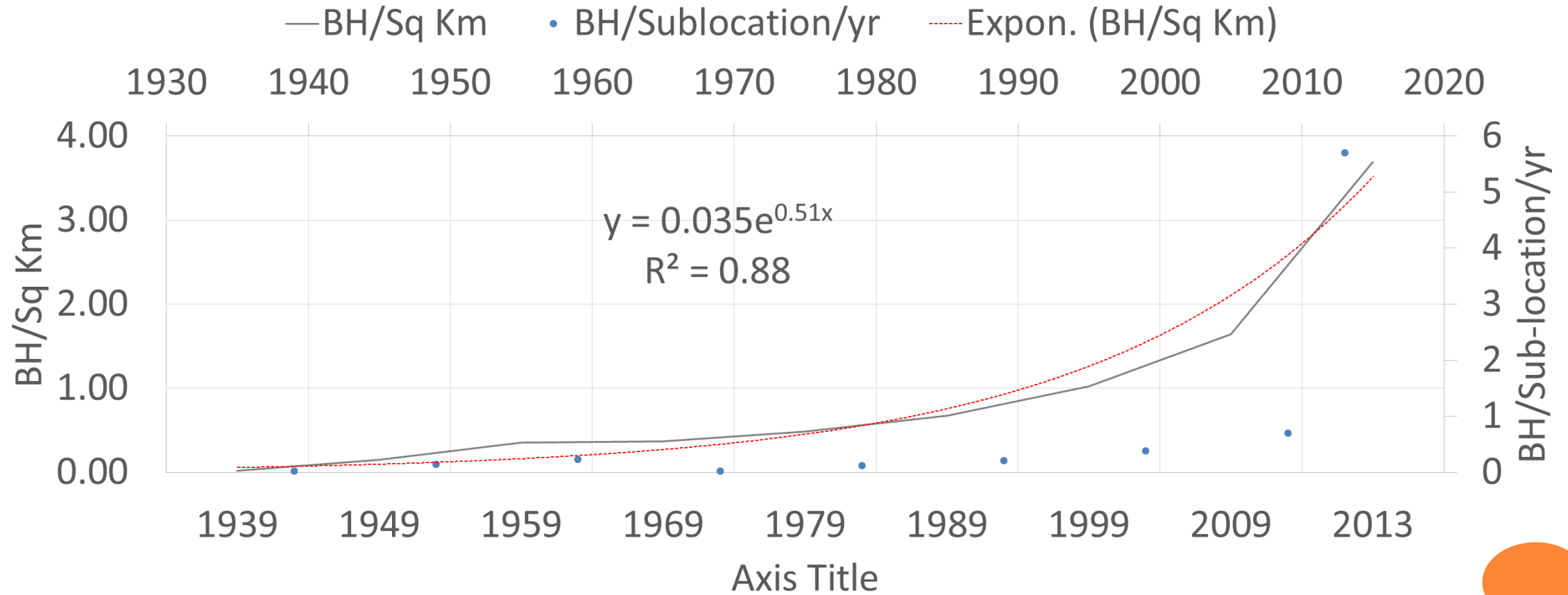
Dulo S.O.

PRESENTATION OUTLINE

- Summary of current situation
- Drivers of groundwater exploitation and development
- Trends in Development and use
- Technology gaps
- Opportunities for innovation



SUMMARY OF CURRENT SITUATION

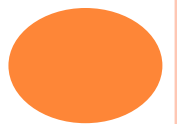
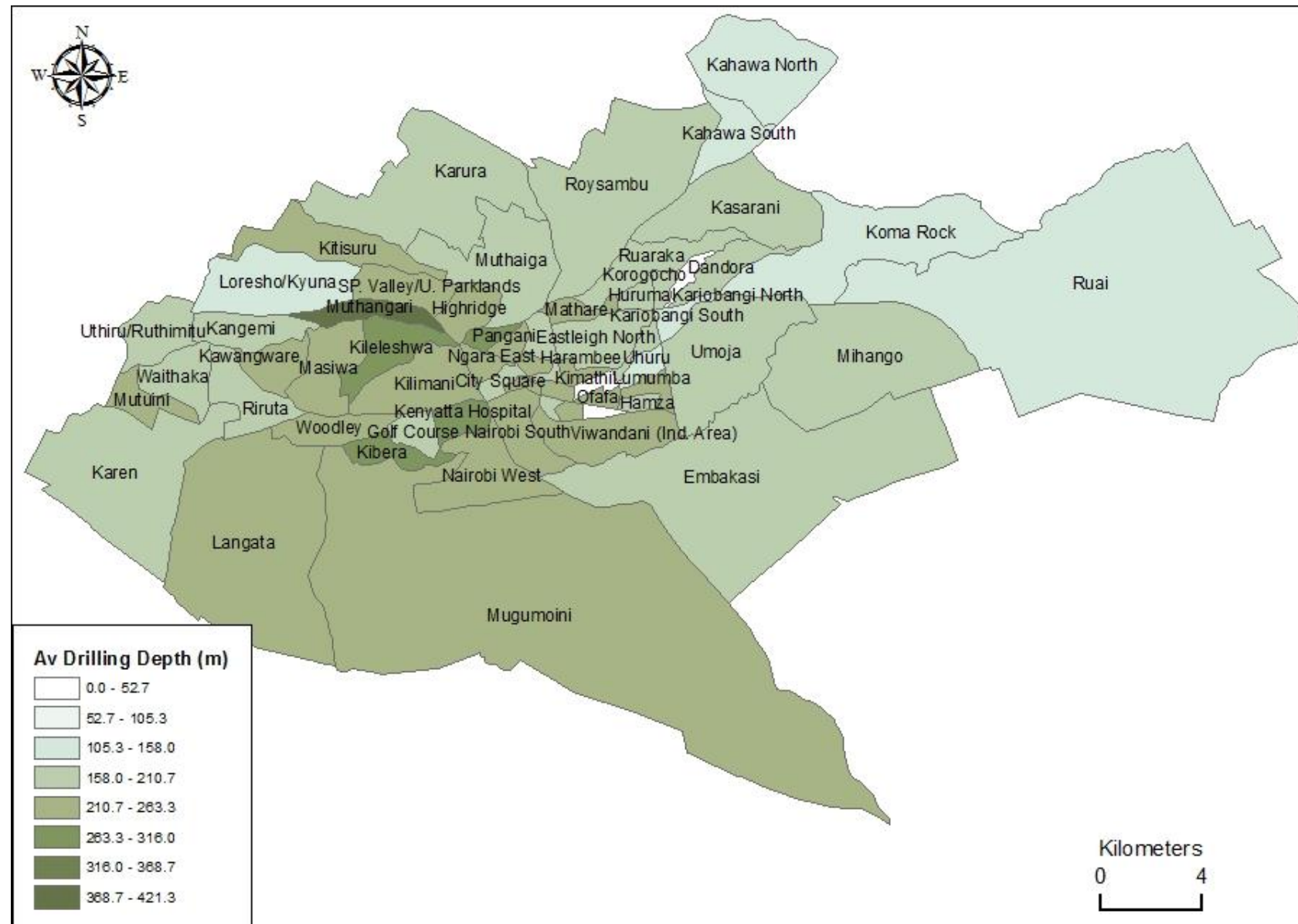


DRIVERS OF GROUNDWATER EXPLOITATION AND DEVELOPMENT

- Standalone system
- Superior quality and quantity
- Distance to surface supply networks
- Change in landuse (competition for productivity)
- Role in maintaining surface water systems
- Uncertainty associated with surface water delivery

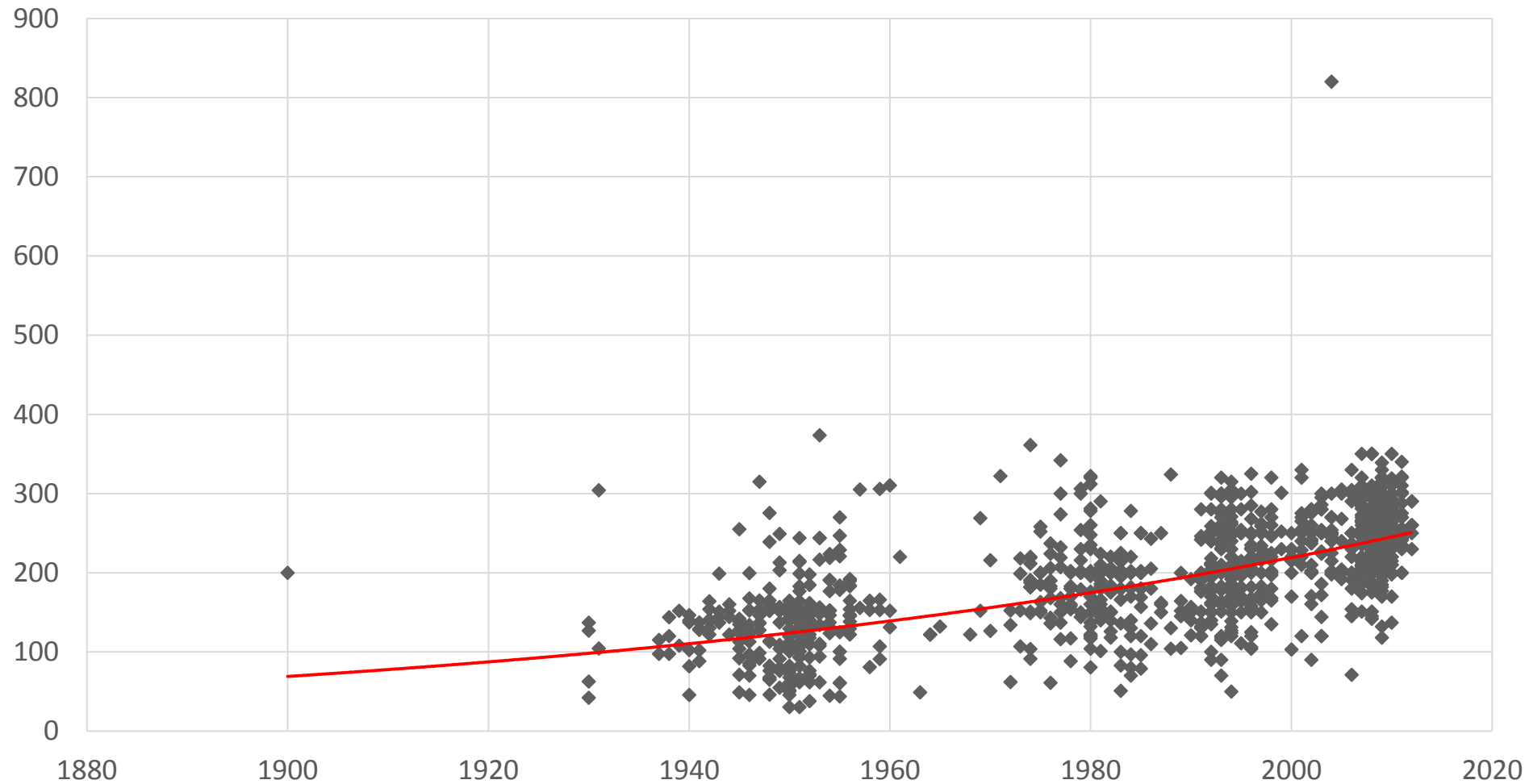


TRENDS IN DEVELOPMENT AND USE IN NAIROBI

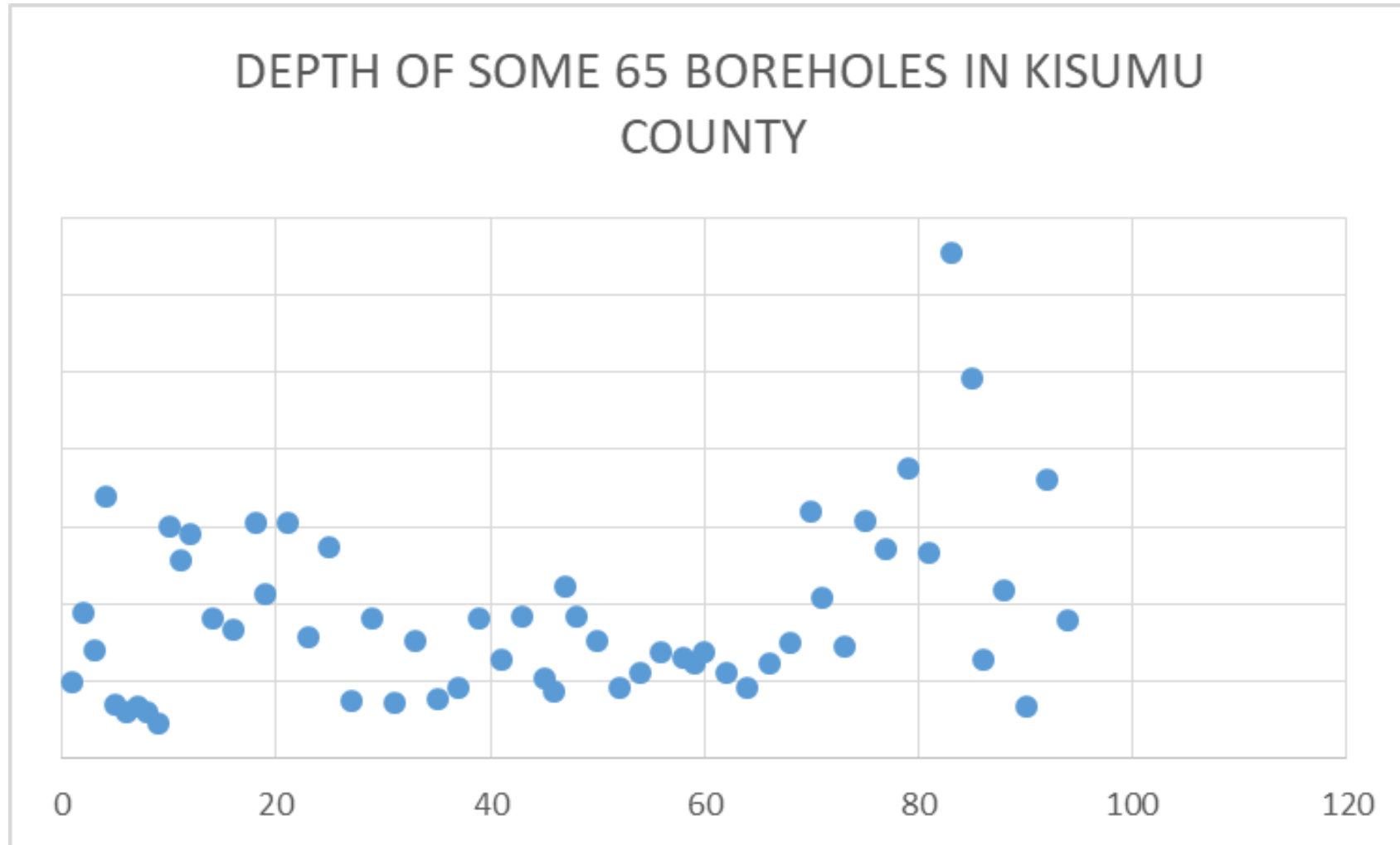


TRENDS IN DEVELOPMENT AND USE IN NAIROBI

DRILLING DEPTH VS TIME



TRENDS IN DEVELOPMENT AND USE IN KISUMU



TECHNOLOGY GAPS – GROUNDWATER DELIVERY

- **Lodwar**, a high-yielding borehole drilled by Oxfam in Nabulon has been connected to an elevated steel storage tank via a 2.2km pipeline which supplies the town.
- Solar panels were erected that are able to generate 46KW – one of the biggest solar pumping systems in Kenya
- Crystal-clear groundwater gushing through the pipes at 16 litres per second (approx. 60 cubic metres an hour).



The solar panel array installed at a borehole in Nakwamekwi. The borehole is now pumping water at a rate of 10 cubic metres an hour.

TECHNOLOGY GAPS – AUTOMATED DELIVERY

- Electronic water dispensers – or ‘water ATMs’



Pay as you use dispenser



Wifi prepaid meter



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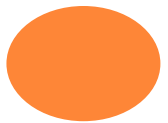
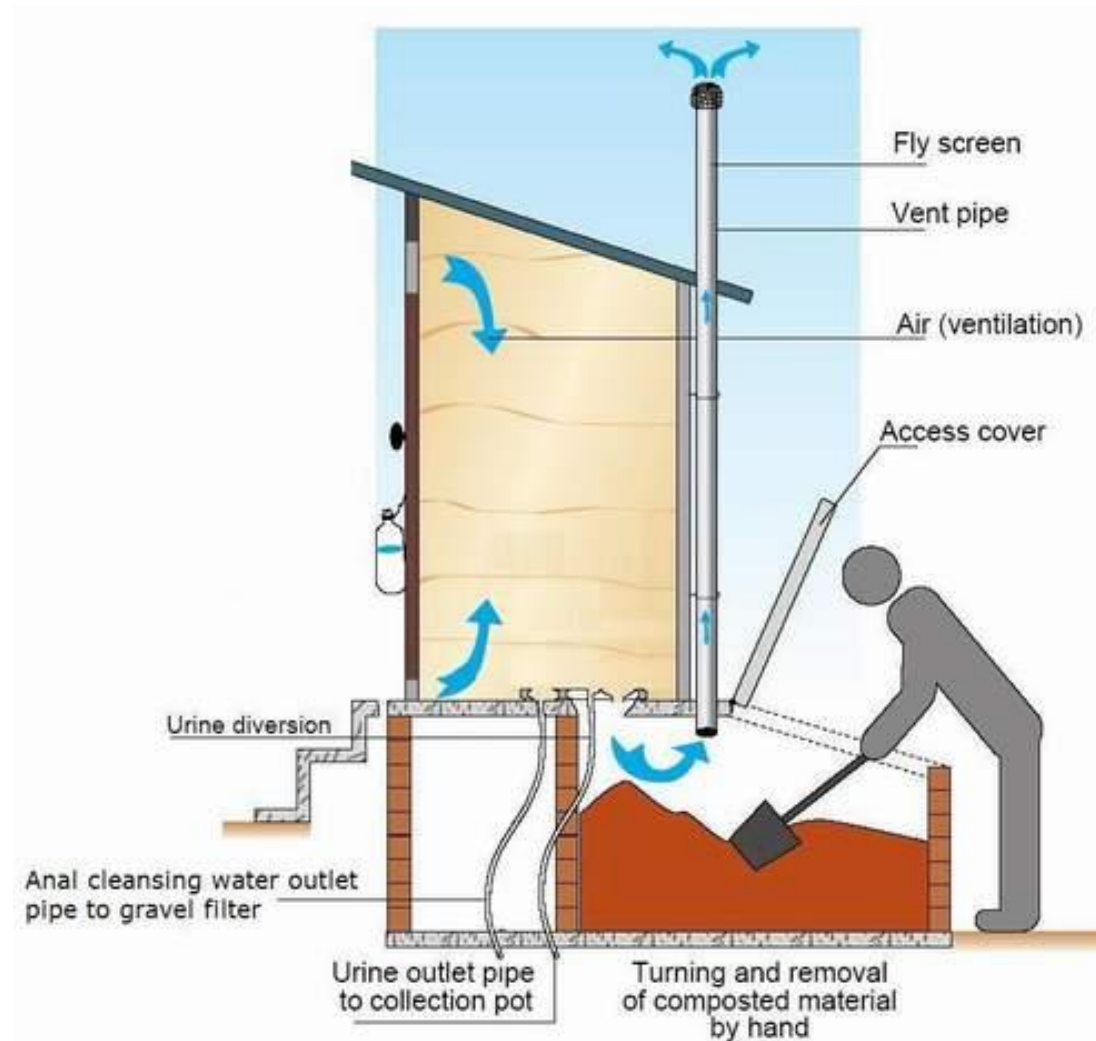


Wifi prepaid meter



TECHNOLOGY GAPS – DRY PIT SYSTEM

- Ideal for flood plains



OPPORTUNITIES FOR INNOVATION IN KISUMU

- Development of an integrated borehole drilling
- Informed borehole citing
- Networked supply system
- Automation
- Metered operation

